

LISTING OF THE CLAIMS

The following listing, if entered, replaces all prior versions of the claims in the present application.

1. (Previously Presented) A network device comprising:
an output port;
a control unit coupled to the output port;
a queue configured to store a copy of a packet forwarded to the output port; and
a memory coupled to the output port,
wherein the output port is configured to output packets for transmission
via a network tunnel,
wherein the network tunnel aggregates a plurality of flows,
wherein the memory is configured to store information,
wherein the information identifies packets which have been forwarded via
the network tunnel, and
wherein the queue indicates how many packets in each of the flows are
outstanding within the network tunnel.
2. (Canceled)
3. (Canceled)
4. (Previously Presented) The network device of claim 1, wherein
the memory is comprised in the control unit; and
the control unit is configured to update the information in the memory to indicate
that the packet was sent via the network tunnel, in response to forwarding
the packet to the output port.

5. (Previously Presented) The network device of claim 1, wherein the control unit is configured to send a copy of the packet to a loopback port with which the queue is associated, and the copy of the packet is stored in the queue in response to the packet being receiving by the loopback port.
6. (Currently Amended) The network device of claim 1, wherein the control unit is configured to identify a flow of the plurality of flows being aggregated for transmission via the network tunnel, the flow comprises a particular packet, and the control unit is configured to select whether the particular packet is admitted to the network tunnel based on which ~~the~~ flow comprises the particular packet.
7. (Original) The network device of claim 6, wherein the control unit is configured to drop the particular packet if the flow currently has a threshold number of packets stored in the queue; and the control unit is configured to admit the particular packet for transmission via the network tunnel if the flow currently has fewer than the threshold number of packets stored in the queue.
8. (Previously Presented) The network device of claim 1, wherein the control unit is configured to forward the copy of the packet stored in the queue to the output port for retransmission via the network tunnel if the packet is dropped in the network tunnel.
9. (Original) The network device of claim 8, wherein the control unit is configured to determine that the packet was dropped in the network tunnel in response to the information stored in the memory and in response to information received from another network device.

10. (Original) The network device of claim 8, wherein the control unit is configured to send the copy of the packet stored in the queue via the network tunnel if the copy of the packet is dropped in the network tunnel.
11. (Previously Presented) The network device of claim 1, wherein the control unit is configured to control a usage level of the queue by adjusting a rate at which packets are removed from the queue, and the control unit is configured to admit a particular packet for transmission via the network tunnel based on the usage level of the queue.
12. (Original) The network device of claim 11, wherein the control unit is configured to reduce the rate at which packets are removed from the queue if the usage level of the queue exceeds a threshold usage level.
13. (Previously Presented) The network device of claim 1, wherein the control unit is configured to forward a new packet to the output port for transmission via the network tunnel if no packets have been transmitted via the network tunnel for a period of time.
14. (Currently Amended) A network device comprising an input port configured to receive a packet conveyed via a network tunnel; a deferred forwarding queue; and a control unit coupled to the input port and the deferred forwarding queue, wherein the control unit is configured to: detect reception of the packet by the input port[[,]] and generate information, ~~wherein the information indicates whether the packet is a particular~~ ~~packet,~~ wherein the control unit is configured to store the packet in the deferred forwarding queue, if the packet is received out-of-order, ~~and~~

wherein the information indicates a capacity of the deferred forwarding queue,
wherein the control unit is configured to de-encapsulate the packet and
send the de-encapsulated packet to a loopback port in response to
removing the packet from the queue, and
the control unit is configured to forward the de-encapsulated packet in
response to the de-encapsulated packet being received by the
loopback port.

15. (Currently Amended) The network device of claim 14, wherein the ~~particular~~ packet is an expected packet.

16. (Original) The network device of claim 14, wherein the control unit is configured to include the information in a tunnel update packet, and the tunnel update packet includes a sequence number of a next packet expected to be received by the network device.

17. (Original) The network device of claim 14, further comprising: an output port, wherein the control unit is configured to forward the tunnel update packet to the output port for transmission to another network device that handles packets being conveyed in the network tunnel.

18. (Canceled)

19. (Currently Amended) The network device of claim 14, wherein the control unit is configured to remove the packet from the deferred ~~processing~~ forwarding queue in response to receiving and processing at least one packet, and the at least one packet is earlier in a sequence of packets than the packet.

20. (Canceled)

21. (Original) The network device of claim 14, wherein the control unit is configured to generate the information in response to the input port receiving a plurality of packets via the network tunnel.

22. (Currently Amended) A system comprising:
a network tunnel;
an ingress network device coupled to send packets via the network tunnel, and
an egress network device coupled to receive packets sent via the network tunnel,
wherein
the egress network device is configured to provide information to the
ingress network device, ~~and~~
the information indicates whether a packet transmitted from the ingress
network device to the egress network device was dropped in the
network tunnel and a capacity of a deferred forwarding queue
within the egress network device,
the ingress network device is configured to apply a packet drop algorithm
to packets being transmitted via the network tunnel, and
the packet drop algorithm differentiates between different packet flows
being aggregated for transmission via the network tunnel.

23. (Original) The system of claim 22, wherein the ingress network device is configured to retransmit the packet to the egress network device if the packet is dropped in the network tunnel.

24. (Previously Presented) The system of claim 22, wherein the ingress network device comprises a queue,
the ingress network device is configured to store a copy of each packet sent via the network tunnel in the queue, and

the ingress network device is configured to remove a copy of a particular packet from the queue in response to the information indicating reception of the particular packet by the egress network device.

25. (Original) The system of claim 24, wherein the ingress network device is configured to adjust a rate at which packets are transmitted via the network tunnel if the information indicates that the packet was dropped.

26. (Canceled)

27. (Previously Presented) The system of claim 23, wherein the egress network device is configured to store the packet in the deferred forwarding queue if the packet is received out of sequence.

28. (Previously Presented) The system of claim 27, wherein the egress network device is configured to remove the packet from the deferred forwarding queue in response to receiving and processing at least one packet, wherein the at least one packet is earlier in a sequence of packets than the packet; and the egress network device is configured to forward the packet in response to removing the packet from the queue.

29. (Previously Presented) A method comprising:
sending a packet via a network tunnel from a first network device, wherein the network tunnel aggregates a plurality of flows;
storing a copy of the packet in a queue, in response to the packet being sent via the network tunnel, wherein the queue indicates how many packets in each of the flows are outstanding within the network tunnel; and
determining whether the packet is dropped in the network tunnel.

30. (Canceled)

31. (Previously Presented) The method of claim 29, wherein the storing the copy of packet in the queue comprises:

 sending the copy of the packet to a loopback port of the first network device, wherein the loopback port is associated with the queue.

32. (Previously Presented) The method of claim 29, further comprising: removing the copy of the packet from the queue if the determining whether the packet is dropped in the network tunnel determines that the packet was successfully received at an egress of the network tunnel.

33. (Previously Presented) The method of claim 29, further comprising: sending the copy of the packet from the queue via the network tunnel if the packet is dropped in the network tunnel.

34. (Previously Presented) The method of claim 29, further comprising: identifying a flow of the plurality of flows being aggregated for transmission via the network tunnel, wherein the flow comprises a particular packet; and selecting whether the particular packet is admitted to the network tunnel based on which flow comprises the particular packet.

35. (Previously Presented) The method of claim 29, further comprising: controlling a usage level of the queue; and admitting a particular packet for transmission via the network tunnel dependent on the usage level of the queue, wherein the controlling the usage level of the queue comprises: adjusting a rate at which packets are removed from the queue.

36. (Original) The method of claim 29, further comprising: sending information to the first network device, wherein the information indicates whether the packet was dropped in the network tunnel.

37. (Previously Presented) The method of claim 36, further comprising:
storing the packet in an egress queue if the packet is received out of sequence by a
second network device.
38. (Previously Presented) The method of claim 37, further comprising:
removing the packet from the egress queue in response to receiving at least one
packet via the network tunnel, wherein
the at least one packet is earlier in a sequence of packets than the packet;
and
forwarding the packet in response to the removing the packet from the queue.
39. (Currently Amended) A method comprising:
receiving a packet being conveyed via a network tunnel;
storing the packet in a deferred forwarding queue, if the packet is received out of
sequence; ~~and~~
sending information to a network device, wherein
the information indicates successful receipt of the packet and a capacity of
the deferred forwarding queue;
de-encapsulating the packet subsequent to removing the packet from the deferred
forwarding queue; and
sending the de-encapsulated packet to a loopback port, wherein the de-
encapsulated packet is forwarded in response to being received by the
loopback port.
40. (Original) The method of claim 39, wherein
the information is sent in response to receiving a plurality of packets via the
network tunnel.
41. (Canceled)
42. (Previously Presented) The method of claim 39, further comprising:

removing the packet from the deferred forwarding queue in response to receiving at least one packet via the network tunnel, wherein the at least one packet is earlier in a sequence of packets than the packet; and forwarding the packet in response to removing the packet from the deferred forwarding queue.

43. (Canceled)

44. (Original) The method of claim 39, further comprising: sending the packet via the network tunnel; and determining whether the packet is dropped in the network tunnel based on the information.

45. (Original) The method of claim 44, further comprising: storing a copy of the packet in a queue in response to sending the packet via the network tunnel.

46. (Original) The method of claim 45, further comprising: sending the copy of the packet from the queue via the network tunnel if the packet is dropped in the network tunnel.

47. (Original) The method of claim 44, further comprising: selecting whether a particular packet is admitted to the network tunnel dependent on which one of a plurality of flows being aggregated for transmission via the network tunnel comprises the particular packet.

48. (Previously Presented) A system comprising: means for sending a packet via a network tunnel from a first network device, wherein the network tunnel aggregates a plurality of flows; means for storing a copy of the packet in a queue, in response to the packet being sent via the network tunnel, wherein the queue indicates how many

packets in each of the flows are outstanding within the network tunnel;
and
means for determining whether the packet is dropped in the network tunnel.

49. (Canceled)

50. (Previously Presented) The system of claim 48, wherein storing the copy of packet in the queue comprises:

sending the copy of the packet via a loopback port associated with the queue.

51. (Previously Presented) The system of claim 48, further comprising:
means for removing the copy of the packet from the queue if it is determined that the packet was successfully received at an egress of the network tunnel.

52. (Previously Presented) The system of claim 48, further comprising:
means for sending the copy of the packet from the queue via the network tunnel if the packet is dropped in the network tunnel.

53. (Previously Presented) The system of claim 48, further comprising:
means for identifying a flow of the plurality of flows being aggregated for transmission via the network tunnel, wherein the flow comprises a particular packet; and
means for selecting whether the particular packet is admitted to the network tunnel based on the flow in which the particular packet is comprised.

54. (Previously Presented) The system of claim 48, further comprising:
means for controlling a usage level of the queue; and
means for admitting a particular packet for transmission via the network tunnel dependent on the usage level of the queue, wherein controlling the usage level of the queue comprises:
adjusting a rate at which packets are removed from the queue.

55. (Currently Amended) A system comprising:
means for receiving a packet being conveyed via a network tunnel;
means for storing the packet in a deferred forwarding queue, if the packet is
received out of sequence; ~~and~~
means for sending information to a network device, wherein
the information indicates successful receipt of the packet and a capacity of
the deferred forwarding queue;
means for de-encapsulating the packet subsequent to removing the packet from
the deferred forwarding queue; and
means for sending the de-encapsulated packet to a loopback port, wherein the de-
encapsulated packet is forwarded in response to being received by the
loopback port.
56. (Original) The system of claim 55, wherein
the information is sent in response to receiving a plurality of packets via the
network tunnel.
57. (Canceled)
58. (Previously Presented) The system of claim 56, further comprising:
means for removing the packet from the deferred forwarding queue in response to
receiving at least one packet via the network tunnel, wherein
the at least one packet is earlier in a sequence of packets than the packet;
and
means for forwarding the packet in response to removing the packet from the
deferred forwarding queue.
59. (Canceled)
60. (Previously Presented) A computer readable medium comprising program
instructions executable to:

send a packet via a network tunnel from a first network device, wherein the network tunnel aggregates a plurality of flows;
store a copy of the packet in a queue, in response to the packet being sent via the network tunnel, wherein the queue indicates how many packets in each of the flows are outstanding within the network tunnel; and
determine whether the packet is dropped in the network tunnel.

61. (Canceled)

62. (Previously Presented) The computer readable medium of claim 60, wherein storing the copy of packet in the queue comprises:
sending the copy of the packet to a loopback port associated with the queue.

63. (Previously Presented) The computer readable medium of claim 60, wherein the program instructions are further executable to:
remove the copy of the packet from the queue if it is determined that the packet was successfully received at an egress of the network tunnel.

64. (Previously Presented) The computer readable medium of claim 60, wherein the program instructions are further executable to:
send the copy of the packet from the queue via the network tunnel if the packet is dropped in the network tunnel.

65. (Previously Presented) The computer readable medium of claim 60, wherein the program instructions are further executable to:
identify a flow of the plurality of flows being aggregated for transmission via the network tunnel, wherein the flow comprises a particular packet; and
select whether the particular packet is admitted to the network tunnel based on the flow in which the particular packet is comprised.

66. (Previously Presented) The computer readable medium of claim 60, wherein the program instructions are further executable to:

- control a usage level of the queue; and
- admit a particular packet for transmission via the network tunnel dependent on the usage level of the queue, wherein
- controlling the usage level of the queue comprises:
 - adjusting a rate at which packets are removed from the queue.

67. (Currently Amended) A computer readable medium comprising program instructions executable to:

- receive a packet being conveyed via a network tunnel;
- store the packet in a deferred forwarding queue, if the packet is received out of sequence; ~~and~~
- send information to a network device, wherein
 - the information indicates successful receipt of the packet and a capacity of the deferred forwarding queue;
- de-encapsulate the packet subsequent to removal of the packet from the deferred forwarding queue; and
- send the de-encapsulated packet to a loopback port, wherein the de-encapsulated packet is forwarded in response to being received by the loopback port.

68. (Original) The computer readable medium of claim 67, wherein the information is sent in response to receiving a plurality of packets via the network tunnel.

69. (Canceled)

70. (Previously Presented) The computer readable medium of claim 67, wherein the program instructions are further executable to:

- remove the packet from the deferred forwarding queue in response to receiving at least one packet via the network tunnel, wherein

the at least one packet is earlier in a sequence of packets than the packet;
and
forward the packet in response to removing the packet from the deferred
forwarding queue.

71. (Canceled)